Valve Box

USER'S MANUAL

Publication 5617-011 Rev B

www.kdscientific.com

kdScientific

phone **508.429.6809**
email **info@kdscientific.com**

Valve Box USER'S MANUAL

Table of Contents

SUBJECT PAGE NO.

General Information 3

Manual Description 3

Safety Information 3

Warranty and Repair Information 4

Warranty 4

Repair Facilities and Parts 4

Serial Numbers 4

Product Overview 6

Operating Instructions 6

Power Connections 6

Valve Box Flow Diagrams 6

Valve and Tubing Information 7

Appendices 8

Appendix A: Maintenance 8

Appendix B: Pump to Valve Box Connections 9

Appendix C: Ordering Information 9

General Information

Manual Description

This manual is designed to provide all information required to connect the valve box to your syringe pump and fluidic system.

SAFETY INFORMATION

Please read the following safety precautions to ensure proper use of your valve box. If the equipment is used in a manner not specified, the protection provided by the equipment may be impaired.

To Prevent Hazard or Injury:

USE PROPER POWER SUPPLY

The valve box is supplied with an approved power supply and line cord. To maintain the safety integrity of the device, use only the following power supplies that was shipped with the device:

USE PROPER LINE CORD

Use only the specified line cord for this product and make sure line cord is certified for country of use. The operating voltage range for the valve boxes is 12 or 24 VDC (see spec page). The universal power supply operating voltage range is 100-240 VAC, 50-60 Hz. 115 VAC and 230 VAC versions differ only with the line cord supplied.

GROUND THE PRODUCT

This product is grounded through the grounding conductor of the power cord. To avoid electric shock, the grounding conductor must be connected to earth ground. Before making any connections to the input or output terminals of the product, ensure that the product is properly grounded.

MAKE PROPER CONNECTIONS

Make sure all connections are made properly and securely. Any signal wire connections to the unit must be no longer than 3 meters.

OBSERVE ALL TERMINAL RATINGS

Review the operating manual to learn the ratings on all connections.

AVOID EXPOSED CIRCUITRY

Do not touch any electronic circuitry inside of the product.

DO NOT OPERATE WITH SUSPECTED FAILURES

If damage is suspected on or to the product do not operate the product. Contact qualified service personnel to perform inspection.

ORIENT THE EQUIPMENT PROPERLY

Do not orient the equipment so that it is difficult to operate the disconnection device.

PLACE PRODUCT IN PROPER ENVIRONMENT

Review the operating manual for guidelines for proper operating environments.

OBSERVE ALL WARNING LABELS ON PRODUCT

Read all labels on product to ensure proper usage.

CAUTION
Refer to Manual

Protective
Ground Terminal

WARRANTY AND REPAIR INFORMATION

Warranty

KD Scientific warranties this instrument for a period of one year from date of purchase. At its option, KD Scientific will repair or replace the unit if it is found to be defective as to workmanship or materials. This warranty does not extend to damage resulting from misuse, neglect or abuse, normal wear and tear, or accident. This warranty extends only to the original consumer purchaser.

IN NO EVENT SHALL KD SCIENTIFIC BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES. Some states do not allow the exclusion or limitation of incidental or consequential damages so the above limitation or exclusion may not apply to you. **THERE ARE NO IMPLIED WARRANTIES OF MERCHANTABILITY, OR FITNESS FOR A PARTICULAR USE, OR OF ANY OTHER NATURE**. Some states do not allow this limitation on an implied warranty, so the above limitation may not apply to you.

If a defect arises within the warranty period, promptly contact **KD Scientific, 84 October Hill Road, Holliston, Massachusetts 01746** using our toll free number 1-508-429-6809. Email address is info@kdscientific.com. Goods will not be accepted for return unless an RMA (returned materials authorization) number has been issued by our customer service department. The customer is responsible for shipping charges for non-warranty repairs. Please allow a reasonable period of time for completion of repairs or replacement. If the unit is replaced, the replacement unit is covered only for the remainder of the original warranty period dating from the purchase of the original device.

This warranty gives you specific rights, and you may also have other rights which vary from state to state.

Repair Facilities and Parts

KD Scientific stocks replacement and repair parts. When ordering, please describe parts as completely as possible, preferably using a part number obtained from our Technical Support department. If practical, enclose a sample part or sketch. We offer a complete reconditioning service.

Serial Numbers

All inquiries concerning our product should refer to the serial number of the unit, located on the rear panel.

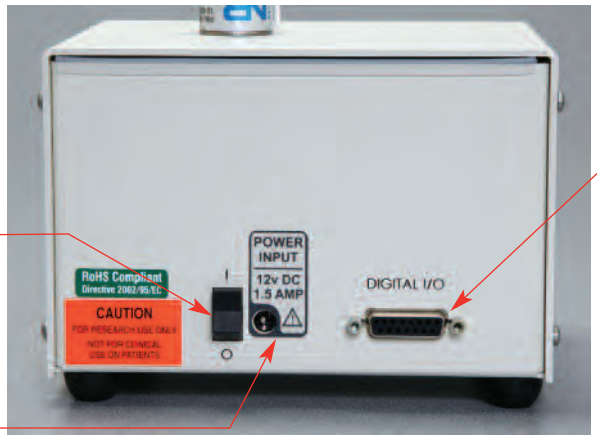
CAUTION: FOR RESEARCH USE ONLY. NOT FOR CLINICAL USE ON PATIENTS.

Product Overview

Power (green LED)

Valve Actuated (green LED)

Fault Indicator (red LED)
[example: shorted coil or excess current]

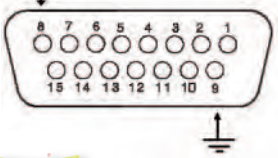


Main Switch

DC Power Input

I/O Connector

Valve In



NOTE **2 ≤ VIH ≤ 30 v**
0 ≤ VIL ≤ 1.2 v

NOTE ***The input connection is optically isolated.***

NOTE ***KD Scientific syringe pumps default is set such that the valve is actuated when pump is withdrawing. See pump user's manual for additional info.***

NOTE ***To reduce heat generation, after activation the current drops to 1/3 its value to hold.***

OPERATING INSTRUCTIONS

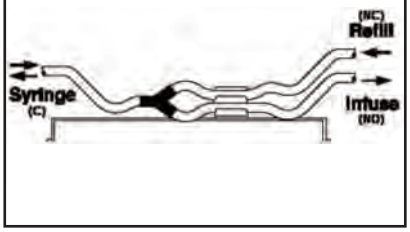
POWER CONNECTIONS

1. Plug the power cord in. The Valve box has a DC power input connector on the rear of the unit. The operating range for the Valve box is 12 or 24 Vdc.
2. Turn on the main power switch.
3. Connect to valve box to pump. See Appendix B for connection details,

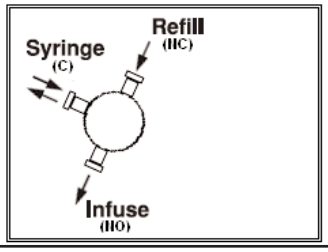
Valve Box Flow Diagrams

Auto Fill Valve Boxes: single valve - commonly used to reload syringe once it is empty or partially empty

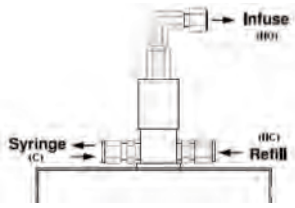
Low Pressure Auto Fill



Medium Pressure Auto Fill

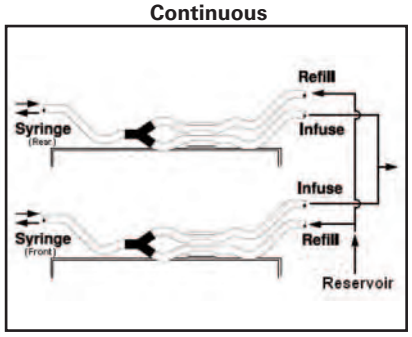


High Pressure Auto Fill

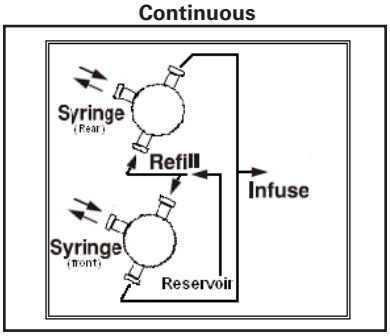


Continuous Delivery Valve Boxes: dual mounted valves - commonly used with a Legato 200 Push/Pull

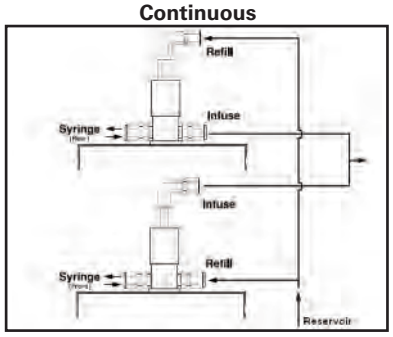
Low Pressure Continuous



Medium Pressure Continuous



High Pressure Continuous



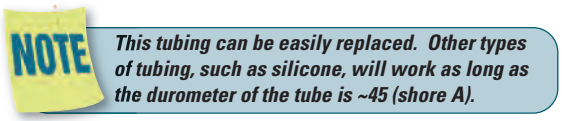
NOTE *For 2 discrete flow streams, make connections to both valves as done in the auto fill set up.*

VALVE AND TUBING INFORMATION

Low Pressure Valve Boxes:

Pressure: 25 psi

Valve: pinch, supplied with C-flex tubing 1/16 ID x 1/8 OD

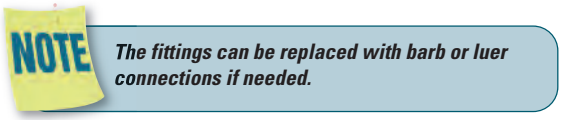

NOTE
This tubing can be easily replaced. Other types of tubing, such as silicone, will work as long as the durometer of the tube is ~45 (shore A).

Medium Pressure Valve Boxes:

Pressure: 100 psi

Valve: Teflon for all wetted parts

3-port (1/4-28 with 1/16 OD tube fittings for plastic tubing



High Pressure Valve Boxes:

Pressure: 200 psi

Valve: 303 stainless steel with perofluroelestomer seals

3-port (1/8 inch NTP with 1/4 inch OD SWAGELOK fittings for stainless steel tubing)

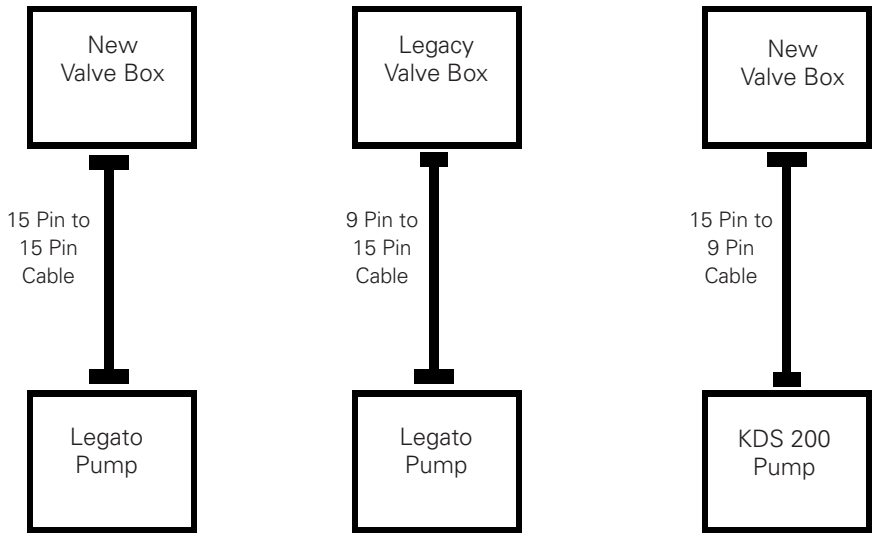
APPENDIX A: MAINTENANCE

Maintenance

Valve boxes require no special maintenance other than keeping them clean by avoiding accidental spills of pumped material.

To clean the exterior surfaces, use a lint-free cloth to remove loose dust. For more efficient cleaning, use a soft cloth dampened [not soaked] with water, an aqeuous solution of 75% isopropyl alcohol, or a mild detergent.

APPENDIX B: PUMP TO VALVE BOX CONNECTIONS



APPENDIX C: ORDERING INFORMATION

Standard Version

Description	Dual Syringe
Auto Fill Valve Box, Low Pressure	**788333**
Auto Fill Valve Box, Medium Pressure	**788336**
Auto Fill Valve Box, High Pressure	**788338**
Continuous Delivery Valve Box, Low Pressure	**788332**
Continuous Delivery Valve Box, Medium Pressure	**788335**
Continuous Delivery Valve Box, High Pressure	**788337**

Replacement Parts

Description	Catalog Number
Replacement 3-Way Pinch Valve	**5126035**
Replacement 3-Way Solenoid Valve	**5126045**
Replacement Valve, High Pressure	**5126057**
Bio-Chem C-Flex Replacement Tubing	**5122033**
I/O Communication Kit	**4400233**
I/O Communication Kit - Legacy Valve Box	**4400232**

Valve Kits

Description	Catalog Number
Low Pressure Auto Fill Kit	**788345**
Female luer lock to 1/16 barb (4 pcs), union 1/16 barb to 1/16 barb (4 pcs) & C-flex tubing (10 ft)	
Low Pressure Continuous Delivery Kit - *(2x autofill kit)*	**788346**
Medium Pressure Nut / Ferrule Auto Fill Kit	**788347**
Nut PEEK 1/16, 1/4-28 (3 pcs), Ferrule, flangeless 1/16 (3 pcs) & Teflon tubing (5 ft)	
Medium Pressure Nut / Ferrule Continuous Delivery Kit - *(2x autofill kit)*	**788348**
Medium Pressure Barb Auto Fill Kit	**788349**
Barb 1/16 (3 pcs) & C-flex tubing (10 ft)	
Medium Pressure Barb Continuous Delivery Kit - *(2x autofill kit)*	**788353**
Medium Pressure Luer Auto Fill Kit	**788351**
Female to male luer lock 1/4-28 (1 pc), Male to female luer lock 1/4-28 (2 pcs)	
Medium Pressure Luer Continuous Delivery Kit - *(2x autofill kit)*	**788352**

Specials

Special valve box versions can be created (additional quantity of valves, various fitting types or different valve) types to suit your application. Please contact us for more information.